



# **Naturally Occurring Asbestos And Erionite**

**Nevada Department of Transportation Board  
Meeting**

**August 8, 2016**

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# Purpose for this Presentation

Address Board questions about costs and impacts of investigating naturally occurring asbestos (NOA) and erionite on NDOT projects

- Statewide NOA and erionite technical services agreement approved at February 2016 Board meeting
- Board requested a follow-up presentation to include technical experts before statewide field testing
- Assessments planned for NDOT rights-of-way, easements, material pits, anticipated project construction limits, and other NDOT properties



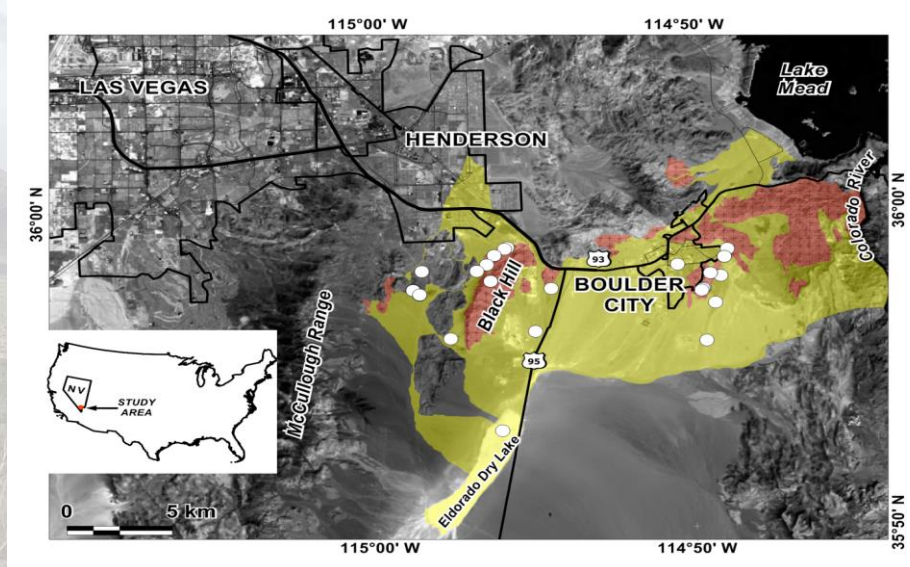
# What is Naturally Occurring Asbestos (NOA) and Erionite?

- NOA occurs in rocks and soil through natural geological processes. Weathering and human activities may disturb NOA-bearing rock or soil and release mineral fibers in the air, which poses a potential risk for exposure by inhalation.
- NOA does not refer to commercially processed, asbestos-containing material, such as insulation and fireproofing in buildings or automobile brake linings.
- Erionite is also a naturally occurring fibrous mineral, similar to asbestos, found in weathered volcanic ash. The fibers also pose health risks when inhaled.



# NOA Nationwide and in Nevada

- NOA occurs in at least 35 states
- 44 of 58 counties in California have documented NOA
- 2013 UNLV study found NOA around Boulder City & Eldorado Valley
- 2014 to 2016 studies confirm NOA in BCB Phase I & II projects

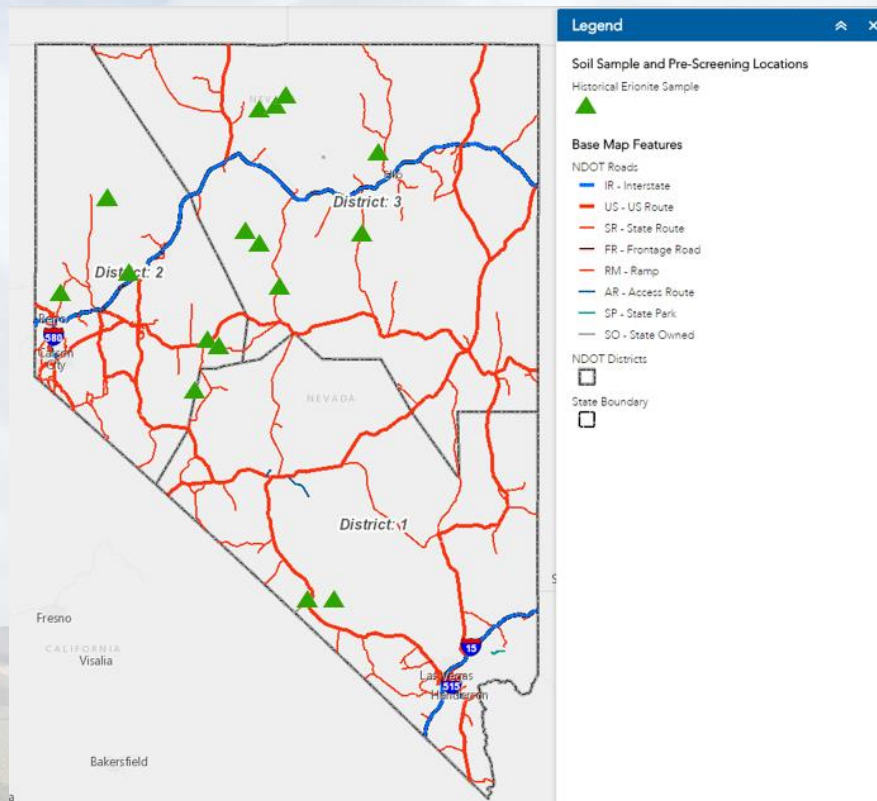


Buck, B.J., D. Goossens, R. Metcalf, B. McLaurin, and M. Freudenberger, 2013.



# Erionite in Nevada

- Known to occur in 16 areas in Nevada, mostly in northern and central parts (USGS 1996)
- Found in volcanic ash & debris deposited in old lake beds
- Deposit thickness varies from  $< \frac{1}{2}$  inch to  $> 40$  inches





# Statewide NOA & Erionite Team

- **Tetra Tech Team**

- J. Edward Surbrugg, Ph.D., CPSS (Soil Scientist, Project Manager)
- Steve Bradley, RG, CEG, CEM (Engineering Geologist)
- Colin Willits (GIS Specialist)
- Plus > 20 experts with air, soil, rock assessments

- **Others**

- NDOT Environmental Services
- Kleinfelder (Las Vegas staff with BCB Project experience)
- Broadbent and Associates (Henderson staff with NOA experience)
- Earth Safety Dynamics (Local CIH)
- Analytical Laboratories (ATEM, EMSL, TEM Analytical)



# NDOT Technical Services Agreement

- **4 Major Technical Tasks**

1. NOA and Erionite Mapping (Web mapping application [WMA])
2. Work Plans (Sampling, Quality, Health & Safety)
3. Analytical Lab Testing
4. Assessment, Analysis, Mitigation, Material Management, Oversight, & Training

- **This Presentation will provide detail primarily for:**

1. WMA activities under Task 1, and
2. Assessment (screening and sampling) under Task 4



# Task 1 Activities (Completed)

- Created statewide web mapping application (WMA) to determine potential locations of NOA and erionite
  - Input from geologists, scientists, GIS specialists, and staff from NDOT and Nevada Bureau of Mines and Geology
- Tested and used to screen over 25 sites across Nevada



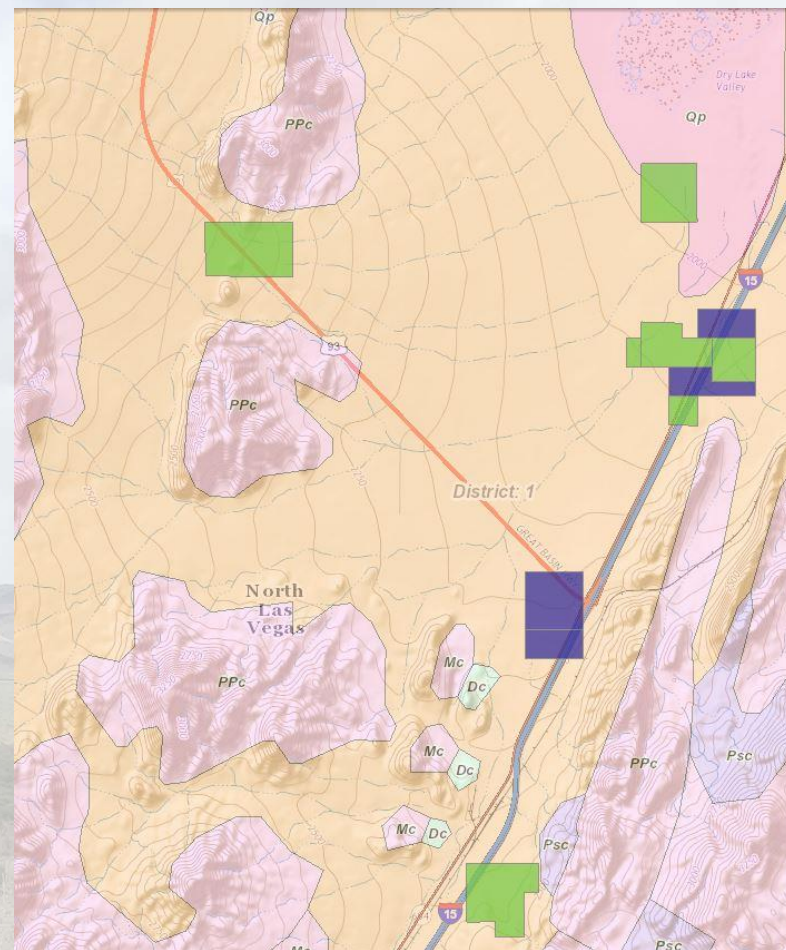
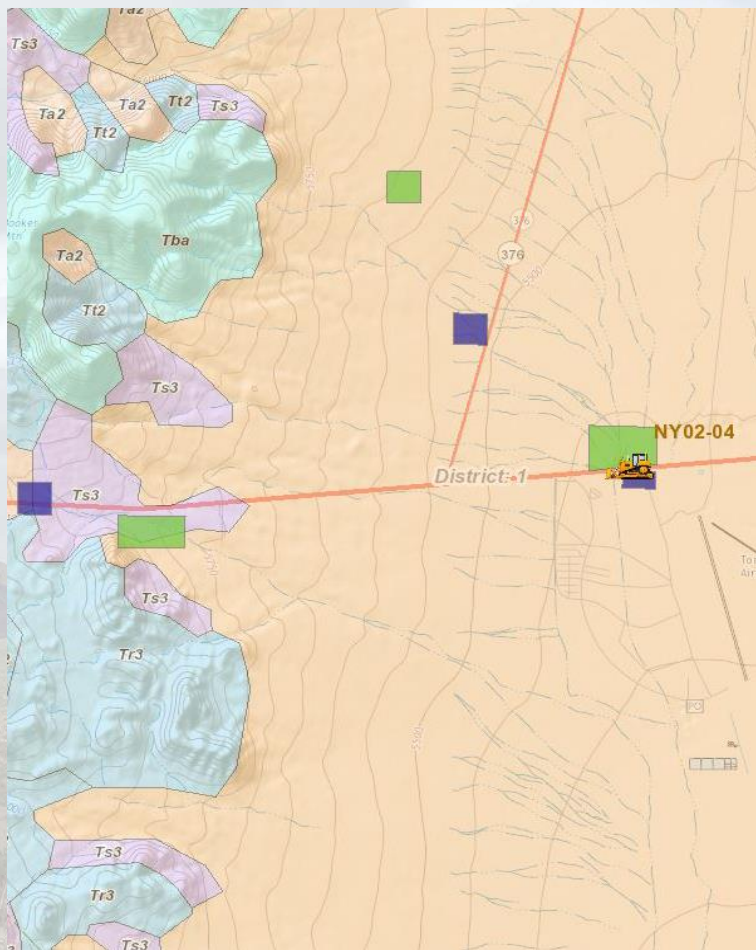
# Screen Sites for NOA and Erionite

- Use WMA geology, soils, and topography layers to screen surrounding and upgradient geology and soils for potential NOA and erionite

Site	County	Geology Type(s)	Potential for NOA	Potential for Erionite
Decant Basin at NY02-04 (Tonopah)	Nye	Mafic to intermediate, intrusive & extrusive, rhyolite flows, intrusive and tuffaceous sedimentary in the foothills west (upland)	Moderate to High	Moderate to High
US 93 & Garnet Interchange Upgrade	Clark	Valley alluvium, limestone and sparse dolomite, siltstone, sandstone in foothills and ranges west and east (upland)	Low	Low

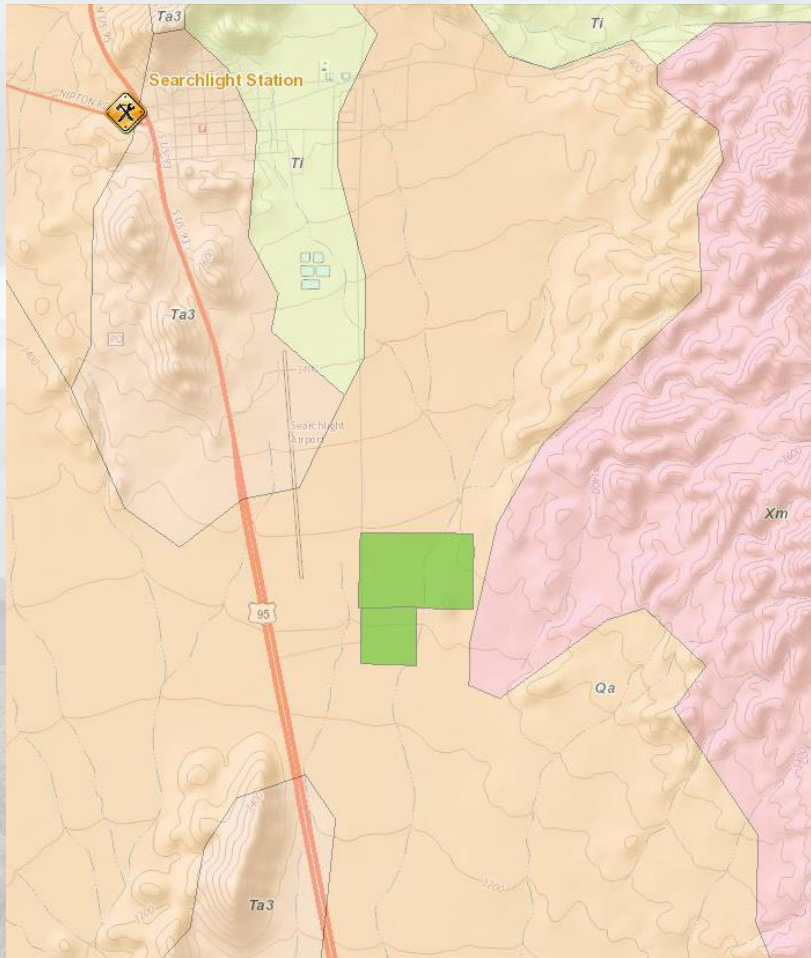


# Geology for Screening Sites



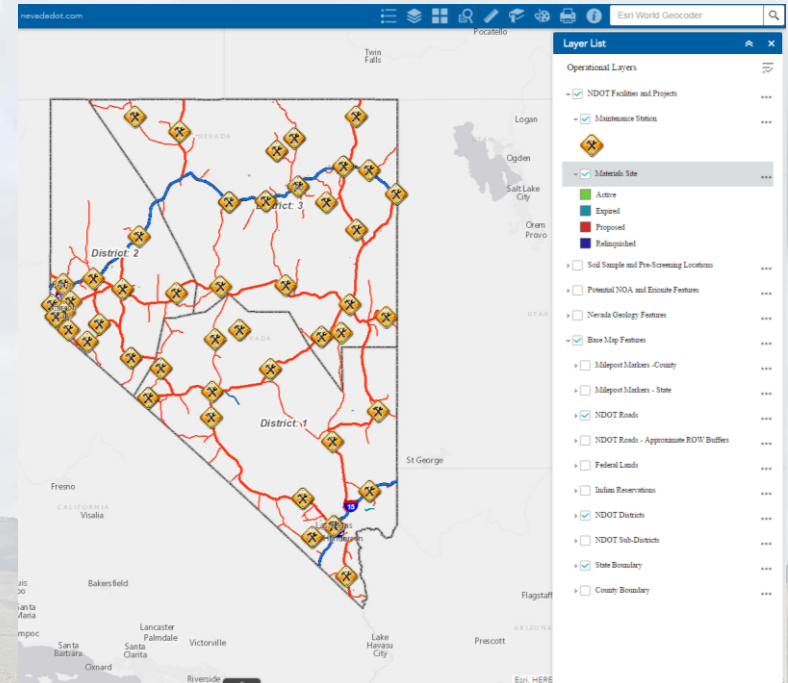
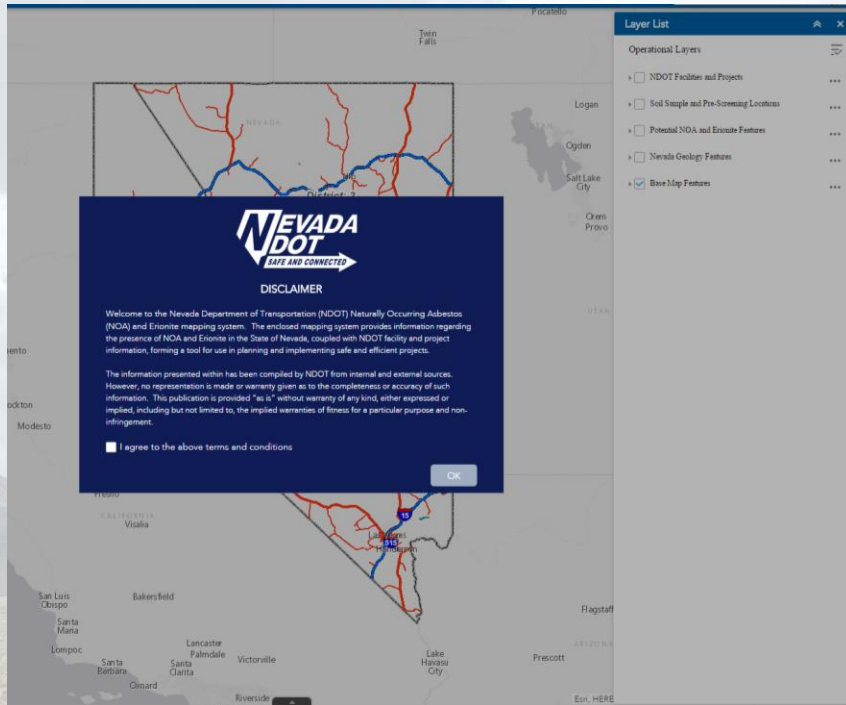


# CL09-01 Material Pit





# Web Mapping Application Screen Shots





NOA and Erionite Mapping System

nevadadot.com

Esrri World Geocoder

+

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Home

Layers

Medford

Logan

Ogden

Salt Lake City

Orem Provo

Flagstaff

Prescott

Lake Havasu City

Victorville

San Bernardino

San Luis Obispo

Bakersfield

Lompoc

San Jose

Modesto

Fremont

Livermore

San Francisco

Concord

Antioch

Fairfield

Vacaville

Sacramento

Stockton

Redding

Eureka

0mi

Move mouse to get coordinates

NEVADA DOT

SAFE AND CONNECTED

DISCLAIMER

Welcome to the Nevada Department of Transportation (NDOT) Naturally Occurring Asbestos (NOA) and Erionite mapping system. The enclosed mapping system provides information regarding the presence of NOA and Erionite in the State of Nevada, coupled with NDOT facility and project information, forming a tool for use in planning and implementing safe and efficient projects.

The information presented within has been compiled by NDOT from internal and external sources. However, no representation is made or warranty given as to the completeness or accuracy of such information. This publication is provided "as is" without warranty of any kind, either expressed or implied, including but not limited to, the implied warranties of fitness for a particular purpose and non-infringement.

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OK

Layer List

Operational Layers

☐ NDOT Facilities and Project

...

☐ Soil Sample and Pre-Screening Locations

...

☐ Potential NOA and Erionite Features

...

☐ Nevada Geology Features

...

☒ Base Map Features

...





# Task 1 – Remaining Work

- Confirmation field verification and selective sampling
- Deliver fully-functioning WMA to NDOT
- Update WMA with new data and future projects
- Develop screening assessment process for NDOT use



# Tasks 2 & 3 Activities

- **Work Plans & Safety Plans**

- Completed Master Sampling and Analysis Plan (SAP), Quality Assurance Plan (QAP), and Health and Safety Plan (HASP) to generally cover all field and sampling work under Agreement
- Completed 3 site-specific SAP/QAP and HASPs for assigned field efforts (Decant Basins, Material Pits, Materials Lab air and dust sampling)
- Additional site-specific SAP/QAP and HASPs (ongoing)

- **Analytical Laboratory Procurement**

- Completed competitive procurement process to identify and subcontract with 3 analytical laboratories



## Task 4 Activities

- Prepared “Procedures for Commercial Aggregate Providers”
- Reviewed analytical data from Commercial Aggregate providers
- Conducted stationary air and dust sampling in the Carson City Materials Lab; sampling at the Las Vegas lab to be completed
- Screened 21 material pits, 6 decant basin sites, and 1 future construction project for NOA and erionite
- Completed soil sampling at 6 decant basin sites and 1 future material pit



# Soil Sampling at Decant Basin Sites





# Naturally Occurring Asbestos And Erionite

## Questions?



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